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of sunlight thru the spectroscopically accessible depths of the atmosphere of *Venus.*

Charles E. St. John and Seth B. Nicholson.

10 minutes. Lantern.

## Interferometer Observations of Double Stars*

(Abstract)

Further observations have been made at Mount Wilson by the writer with the rotating type of stellar interferometer devised by Anderson and applied by him with great success to the determination of the orbit of the close double star *Capella.*

The new measures of *Capella* indicate that the orbital elements derived by Anderson will require only small corrections.

The duplicity of the known double star *κ Ursae Majoris* (A 1585) was independently detected by Anderson and the writer with the interferometer on the night of March 1, 1921. Aitken's measures in 1907, 1909 and 1919 and the recent results with the interferometer are as follows:

| Date | Angle | Distance |
|---|---|---|
| 1907.83 | 283°.2 | 0″.21 |
| 1909.33 | 281 .4 | 0 .25 |
| 1919.29 | 264 .9 | 0 .15 |
| 1921 Mar. 1 | 251 .9 | 0 .0836 |
| “ 2 | 252 .5 | 0 .0833 |
| “ 31 | 251 .3 | 0 .0801 |
| Apr. 1 | 250 .7 | 0 .0796 |
| “ 30 | 250 .2 | 0 .0772 |

About 70 stars have been examined and found to show no decided changes of visibility of the fringes with varying position angle, with slit separations up to 80 inches.

Paul W. Merrill.

## Summary of Mount Wilson Magnetic Observations of Sun-Spots for May and June, 1921.

The mean number of groups observed daily during May, namely 1.4, was lower than for any month since 1914. The interesting group, No. 1842, with which the magnetic storms and auroras of May 13th and 14th were associated, made the spotted area for the month relatively larger, however. June was a more active month with an average of 3.0 groups each day. There was one spotless day in May and none in June.

## MAGNETIC CLASSIFICATION OF SUN-SPOTS FOR MAY, 1921

| No. | C. M. P. | Lat. | H | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1841 | Apr. 27.8 | +10 | *x* |  | *x* | *x* | *x* |  |  |  |  |  |  |  |  |  |  |  |
| 1842 | May 14.2 | 0 | 35 |  |  |  |  |  |  |  | *x* | γ | γ | γ | γ | γ | γ | γ |
| 1843 | 8.2 | − 7 | 4 |  |  |  |  |  |  |  | *ap* | *ap* | *x* |  |  |  |  |  |
| 1844 | 17.9 | + 6 | *x* |  |  |  |  |  |  |  |  |  |  |  |  | *x* | *x* |  |
| 1845 | May 24.2 | +11 | 11 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | 0 | 1 | 1 | 1 | ..... | ..... | ..... | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 1 |

| No. | C. M. P. | Lat. | H | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1842 | May 14.2 | 0 | 35 | γ | *x* | βγ | βγ |  |  |  |  |  |  |  |  |  |  |  |  |
| 1845 | 24.2 | +11 | 11 |  | *x* | *x* | *ap* |  |  |  |  | *ap* | *ap* | *ap* | *x* |  |  |  |  |
| 1846 | May 15.4 | −10 | *x* |  |  | *x* |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1847 | June 1.2 | −15 | *x* |  |  |  |  |  |  |  |  |  |  |  | *x* | *x* | *x* | *ap* |  |
| 1848 | 2.3 | − 7 | *x* |  |  |  |  |  |  |  |  |  |  |  | *x* | *x* | *af* | *af* |  |
| 1849 | May 26.9 | +11 | *x* |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | *x* |
|  |  |  |  | 1 | 2 | 3 | 2 | ..... | ..... | ..... | ..... | 1 | 1 | 1 | 3 | 2 | 2 | 2 | 1 |

### NOTES

No. 1842 The passage of this group across the Central Meridian of the Sun was accompanied by an intense magnetic storm and an Aurora Borealis of unusual activity.

No. 1848 This was a single spot with positive polarity preceded by faculae and calcium flocculi.

## MAGNETIC CLASSIFICATION OF SUN-SPOTS FOR JUNE, 1921.

| No. | C. M. P. | Lat. | H | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1849 | May 26.9 | +11 | x | x | | | | | | | | | | | | | | |
| 1850 | June 2.2 | −17 | 8 | ap | | x | | | | | | | | | | | | |
| 1851 | 3.8 | +13 | 17 | βp | | βp | βf | βf | β | βf | βf | x | x | | | | | |
| 1852 | 9.5 | 0 | 29 | | | | ap | ap | ap | ap | ap | ap | ap | ap | ap | ap | ap | x |
| 1853 | 11.0 | +14 | 8 | | | | | | | af | β | β | | | | | | |
| 1854 | 9.6 | + 8 | 16 | | | | | | | | a | a | βp | βp | βp | βp | β | x |
| 1855 | 3.4 | − 6 | x | | | | | | | | x | x | | | | | | |
| 1856 | 7.3 | −10 | 5 | | | | | | | | | a | a | x | x | | | |
| 1857 | 10.2 | +15 | 7 | | | | | | | | | | β | βf | β | | | |
| 1858 | 10.7 | −13 | 9 | | | | | | | | | | βp | βf | βf | | | |
| 1859 | 9.5 | − 4 | 4 | | | | | | | | | | a | x | | | | |
| 1860 | June 13.3 | − 6 | 4 | | | | | | | | | | | | β | βp | | |
| | | | | 3 | ..... | 2 | 2 | 2 | 2 | 3 | 5 | 6 | 7 | 6 | 6 | 3 | 2 | 2 |

| No. | C. M. P. | Lat. | H | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1861 | June 22.3 | +10 | 30 | x | ap | ap | ap | ap | ap | ap | ap | ap | ap | ap | ap | x | | |
| 1862 | 28.2 | +14 | 13 | | | | | | | | ap | a | a | a | | | | |
| 1863 | 25.3 | −14 | 5 | | | | | | | | | af | | | | | | |
| 1864 | 29.7 | − 7 | 29 | | | | | | | | | | βf | β | βp | βp | βp | βp |
| 1865 | June 30.2 | +14 | 18 | | | | | | | | | x | ap | ap | ap | a | a | a |
| 1866 | July 1.1 | +14 | 22 | | | | | | | | | | | x | β | βp | βp | βp |
| 1867 | July 6.2 | + 5 | 25 | | | | | | | | | | | | | | | x |
| | | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 4 | 4 | 5 | 4 | 4 | 3. | 4 |

### NOTES

No. 1852 A return of No. 1842. A regular spot surrounded by a large area of bright calcium flocculi which extended over No. 1852 and No. 1853.

No. 1853 A negative spot in the northern hemisphere on June 7.

No. 1854 This group developed between No. 1852 and No. 1853.

No. 1857 and No. 1858. These groups developed on June 10th between 6:30 A.M. and 10:45 A.M. P. S. T.

No. 1863 A positive spot in the southern hemisphere.

No. 1864 A return of No. 1848.

No. 1866 A return of No. 1851.